

REMARKS

Claims 1-6, 8-10, 12-21 and 31-33 are now pending in the application. Claims 1-2, 4, 6, 14-19 and 21 are amended herein. Support for the amendments can be found in paragraphs [0001]-[0038] and Figures 1-3 of the instant application. No new matter is added. Claims 7 and 11 are cancelled herein. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 1 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Horgan et al. (U.S. Pat. Pub. No. 2004/0253489). This rejection is respectfully traversed.

Applicants assert that claim 1 is patentable over Horgan because Horgan does not appear to disclose detecting a decrease in a first power demand; routing an excess power output, which exists because the current fuel cell stack output exceeds a lower second power demand (a decreased power demand), to other components which consume the excess power; and gradually reducing the power output to meet the second power demand as called for in claim 1.

In contrast, Applicants respectfully submit that Horgan appears to disclose and is directed to regulating the amount of power produced by the fuel cell stack to intentionally increase power production to produce excess power to charge the batteries. The regulation is performed in response to a prediction by a model rather than detecting a decrease in power demand. Specifically, Horgan discloses that “to

charge the batteries 21, the fuel cell system 10 controls the fuel cell stack 20 so that the stack 20 produces more power than is consumed by the load and the various parasitic equipment of the fuel cell system 10 that draws power from the stack 20.” (emphasis added) See at least Horgan paragraph [0065], lines 5-7. Thus, Horgan appears to disclose increasing power output of the fuel cell and routing the excess power to charge batteries. See at least paragraphs [0022]-[0026] of Horgan. Therefore, Horgan discloses and teaches ascertaining/predicting a future load and operating the fuel cell system to produce a power output to exceed the current and future load to charge the batteries.

Increasing the power output of the fuel cell stack is not gradually reducing the power output to meet a new lower power demand. Additionally, increasing the power output to charge batteries is not the same as gradually decreasing the power demand and routing the resultant excess power output to a component of the fuel cell system. Moreover, the Horgan reference does not appear to disclose that the component operates with the excess power output at a power level greater than that required to support the new lower power demand placed on a fuel cell system. Accordingly, it is respectfully submitted that the Horgan reference does not disclose, teach or suggest the subject matter called for in claim 1. For at least these reasons it is respectfully submitted that claim 1 is patentable over Horgan and withdrawal of the instant rejection is requested.

Claims 2, 3, and 14-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Horgan et al. in view of Gurin et al. (U.S. Pat. Pub. No. 2005/0100777). This rejection is respectfully traversed.

Claims 2 and 3 both depend from claim 1, and for at least the same reasons stated above with reference to claim 1 are patentable and withdrawal of the instant rejection is requested.

Moreover, claims 2 and 3, are further patentable over Horgan in view of Gurin because neither reference, either singularly or in combination, appears to disclose routing an excess power output, resulting from the current fuel cell stack output exceeding a new lower power demand, to a coolant pump motor and operating the coolant pump at an output level greater than that required to support the new lower power demand. As stated above, Horgan does not appear to disclose an excess power output which exists due to a power output that is greater than the decreased power demand. Additionally, Horgan does not appear to disclose operating any components of the fuel cell system at a level that is greater than that required to support the current power demand of the fuel cell system.

Gurin appears to disclose using fuel cell power for the internal needs of the fuel cell system including coolant pump motors. Gurin, however, does not appear to disclose using excess power output that is a result of a decrease in power demand. Furthermore, Gurin does not appear to disclose powering a coolant pump motor at a level that is greater than that required to support the lower power demand on the fuel cell system.

Accordingly, it is respectfully submitted that neither Horgan nor Gurin, either singularly or in combination, disclose, teach or suggest the subject matter called for in claims 2 and 3. Therefore, for at least these additional reasons it is respectfully

submitted that claims 2 and 3 are further patentable and withdrawal of the instant rejection is requested.

Applicants respectfully assert that claim 14 is patentable over Horgan in view of Gurin because neither reference, either singularly or in combination, appears to disclose detecting a decrease in power demand to a lower power demand; gradually reducing the power output of the fuel cell stack to meet the lower demand while maintaining a pressure differential between the anode and cathode flow fields below a predetermined value; and routing excess power output of the fuel cell stack, resulting from the difference between the gradually decreasing power output and the lower power demand, to a component of the fuel cell system. As stated above with regard to claim 1, Horgan is directed to increasing the power output of the fuel cell to charge batteries in anticipation of an increased power demand. Gurin does not appear to disclose an excess power output that is a result of a difference between a gradually decreasing power output and a new lower power demand. For at least these reasons, claim 14 is patentable over Horgan in view of Gurin and withdrawal of the instant rejection is requested.

Claim 15 depends from claim 14, and for at least the same reasons stated above with reference to claim 14 is patentable over Horgan in view of Gurin. Furthermore, as stated above with regard to claim 2, Gurin does not appear to disclose powering a coolant pump motor at a level that is greater than that required to support the lower power demand of the fuel cell system. For at least this additional reason, Applicants respectfully submit that claim 15 is patentable and withdrawal of the instant rejection is requested.

Claims 4-10, 12-13, and 16-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Horgan et al. in view of Gurin et al. in view of Sakai (U.S. Pat. Pub. No. 2006/0035120). This rejection is respectfully traversed.

Claims 4-10 and 12-13 all depend from claim 1, and for at least the same reasons stated above with reference to claim 1 are patentable. Claims 16-21 all depend from claim 14, and for at least the same reasons stated above with reference to claim 14 are patentable. Thus, withdrawal of the instant rejection is requested.

Furthermore, regarding claims 4, 6, and 16-17, none of the references, either singularly or in combination, appear to disclose operating a radiator fan motor or a heater at a power level greater than that required to support the lower power demand. Horgan is not concerned with operating a radiator fan motor or a heater. Gurin and Sakai appear to disclose routing power to other components and Sakai appears to teach the importance of regulating humidity. However, neither appears to disclose operating those components at a level greater than that required to support the power demands of the fuel cell system. In addition, none of the references appear to disclose the subject matter of claims 5 and 18. For at least these additional reasons, it is respectfully submitted that claims 4-6 and 16-18 are further patentable over Horgan in view of Gurin in view of Sakai and withdrawal of the instant rejection is requested.

Applicants also assert that claims 13 and 21 are patentable over Horgan in view of Gurin in view of Sakai because none of the references, either singularly or in combination, appear to disclose "routing as much excess power output of the fuel cell stack as possible to a coolant pump motor in the fuel cell system, routing as much as possible of any remaining excess power output to a radiator fan motor in the fuel cell

system, routing as much as possible of any remaining excess power output to a heater in the fuel cell stack, and routing any remaining excess power output to other components in the fuel cell system.” While Gurin and Sakai appear to disclose routing power to internal load demands, none of the references discloses routing as much excess power output as possible through each component in the order disclosed in claims 13 and 21. For these additional reasons, it is respectfully submitted that claims 13 and 21 are further patentable over Horgan in view of Gurin in view of Sakai and withdrawal of the instant rejection is requested.

NEW CLAIMS

Claims 31-33 are added herein. It is respectfully submitted that new claims 31-33 all call for patentable subject matter. Accordingly, allowance of new claims 31-33 is requested.


CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner

believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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